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ABSTRACT

This study examined the theoretical beliefs and practice of a middle school mathematics teacher. The teacher completed formal and informal interviews and a survey that identified his beliefs about teaching, what he thought was important for his students to learn, and what he believed was the teacher's role in the classroom. The researcher conducted three classroom observations over 2 weeks. A group of 31 of the teacher's students completed a survey that was based on the teacher's answers to his survey. Data analysis indicated that the teacher's practice was closely aligned with his theoretical beliefs. The teacher was practical in his concept of his role as teacher and very technical in terms of classroom management. He had a practical orientation to teaching, with a genuine concern for students' ability to understand mathematics, not just learn it. Despite the fact that the teacher's practice was closely aligned with his beliefs, organizational and personal constraints sometimes caused him to teach in ways that were not consistent with his beliefs. (SM)

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Running Head: THEORY AND PRACTICE: EXAMINING OTHERS: EXAMINING

Theory and practice: Examining Others: Examining Ourselves

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Abstract

This study examined the theoretical beliefs and practice of a middle school mathematics teacher. The researcher selected the teacher because they shared common beliefs and their practice was very similar. Results indicated that although the teacher's practice was closely aligned with his theoretical beliefs, organizational and personal constraints sometimes caused him to teach in ways that were not consistent with his beliefs. The importance of contextual factors and issues related to overcoming them will be shared.

Overview of the Study

Every educator has their own personal theory about education, and within their minds the extent to which they believe they are putting their theory into practice. But how many educators examine their practice to see how closely aligned their theory and practices truly are? If educators did this, they might be pleasantly or unpleasantly surprised. The researcher involved gained a new perspective, not only on the theory and practice of the teacher observed, but on his own practice as well. The purpose of this study was to determine if the selected teacher practices the theoretical beliefs he espouses. I examined the relationship between the theory and practice of a middle school mathematics teacher. I determined the theoretical belief system of the selected teacher, and then examined if he practiced what he preached. The teacher's personal theory and practice were examined within the framework of Habermas' three cognitive interests, technical, practical, and emancipatory as interpreted by Grundy (1987). "These interests constitute the three types of science by which knowledge is generated and organized in our society"(Grundy, 1987, p.10). The technical interest revolves around one's desire to control or manage the environment. In the case of a teacher the environment would be their classroom and teaching practices. The teacher directs the learning and the students are passive recipients. The practical interest differs from the technical in that it moves away from controlling the environment toward an understanding of it and being one with it. The teacher serves as the facilitator of learning, and the students are actively involved in constructing their own learning. The emancipatory interest fosters an autonomous environment where the teacher and students are responsible for creating the learning environment together. There will be no names used in this paper and the teacher will be referred to simply as the teacher.

Selected Site

The setting chosen for this study was a Middle Magnet School in a Southern community. There are several reasons for selecting this site for the study, the first being convenience. I am a teacher in the school and it was easier to complete this study in an environment I am familiar with. Also, I know the people in the school and found it easier to approach them about this study. The last, and most important reason is that I selected a teacher who whom I have much in common. We were both in the United States Air Force and retired for similar reasons. We have similar views on education and where it's heading, and we became teachers for the same reason, we wanted to help improve the educational system for children. We are also certified in the same academic area. Additionally, we have similar views on how a classroom should be managed and what is important for students to learn: academics and responsibility.

Methodology

I conducted formal and informal interviews with the teacher. Informal interviews were discussions we had prior to and during the study about our school, education, and what we want to achieve. Formal interviews were conducted during the course of the project. We sat down twice a week and discussed relevant issues I brought up. I decided against taping the interviews so that neither the teacher nor I would feel uneasy about the discussions. I took extensive notes during the interviews and shared them with the teacher for clarification and verification. After the interviews I developed a survey (Attachment 1), for the teacher to complete. The teacher's survey identified his beliefs about teaching, what he thought was important for his students to learn, and what he believed was the teacher's role the classroom. I used Grundy's categories (previously cited), which she based on Habermas' cognitive interests to determine the theory the teacher held. This framework provides three types of cognitive interests, or world views, that

determines how one constructs their own beliefs about theory and practice. I used his responses to develop a student survey to ask students their views on how the teacher taught. (Attachment 2). With the data from the interviews and surveys collected, my last step was to observe him teaching. I conducted three observations over a two-week period, one announced and two unannounced.

Survey and Interview Findings

The first step was to compare what the teacher told me during our discussions to what he wrote on the teacher survey. His answers on the survey correlate to what was said during our discussions. The responses to the teacher survey are listed below:

1. Briefly state why you decided to become a teacher?
 - "I wanted to do what little I can to help improve the system instead of just complaining about it."
2. What do you feel is the most important function of a teacher?
 - "The most important function of a teacher is to act as a facilitator for student learning."
3. What are the two most important goals you have set for your students, and what methods do you use to get them to achieve them?
 - "Accept responsibility for their learning and commit themselves to learning are two goals I set. I encourage them to use time management skills while developing verbal skills."
4. What is your idea of an effective educational setting?
 - "A setting free of unusual distractions, comfortable, and offers a feeling of safety and security."

5. If you could teach your students only one thing each year, what would it be?

- "Develop a plan and follow the plan (with modifications as needed)."

6. If you had the ability to change any part of the current education system, which part would it be and why?

- "I would require all high-level decision makers to spend at least a month in the classrooms annually. This would keep those people in touch with current trends and student thinking and behavior."

7. What is your personal philosophy of education?

- "I feel that all students can learn. With that in mind, the task for teachers is to find the key for each child. This is not always an easy thing to do. As teachers we must continuously look for ways to stimulate and motivate students so they will want to learn and take responsibility for their learning."

In every question, the written answers match what was said during our interviews and discussions. His main goal is not only to teach his students mathematics, but also to teach them responsibility. Responsibility for their own learning, actions, and deeds. Student responsibility is a big component of his educational theory. He believes if he can teach his students how to act responsibly then they will accept that responsibility, and apply it to their educational career. His personal philosophy also challenges teachers to take responsibility for their student's learning. He doesn't want to stand in front of the classroom and try to pour the knowledge into them, but instead, wants to try to find ways to relate what we are teaching them to their personal lives, so they will want to learn. He said, "I can stand in front of the room all day and lecture, but if the lectures fall on deaf ears then what good am I doing. I want them to see how they can use what they are learning, and stimulate their desire to learn more." He believes people learn in different

ways, and that if we can incorporate many different strategies into our teaching then we will have a better chance of helping each student learn. The results of the interview and survey indicate that the teacher holds a practical perspective of teaching. Thus, his theoretical beliefs espouse the teacher as facilitator and the students as active learners. He sees learning as relating to life and control as needs to be relevant.

The teacher also believes that we should build on what the students already know, and try to draw information out of them instead of just pouring it into them. During one of my observations I witnessed this firsthand, he integrated his theoretical belief of the need to facilitate learning. He had a student that had a question about a certain homework problem. Instead of just solving the problem for her, he guided her through solving it herself. He asked questions that she could answer, which led her to solve something she stated she didn't understand. In essence he was guiding his students and not just teaching them. From my observations he does facilitate learning, not just teach. He tries to lead his students where he wants them to go, but only lead them so far. After he gets them headed in the right direction he turns them loose, and assists in keeping them on the right track. For example, when he teaches them a new mathematical concept he let's them work in groups to help each other understand the concept and roams around the room observing and helping only when the group as a whole is unable to solve their own problem(s). During one of my observations I witnessed him doing exactly what he espoused. One student didn't have his homework and tried to blame its incompleteness on several different factors. The teacher discussed it with the student and the student admitted that even though other factors were involved it was ultimately his responsibility for not having his homework. His idea of getting his students to act responsibly, and accept responsibility for their own actions, is in

practice in his classroom. It wasn't clear if students were willing to take that responsibility, but it was clear that it was being thrust upon them.

An interesting observation is that the teacher tries to make the students feel good about themselves, even if what they did was wrong or inappropriate. I observed him with students and he continually left them with some kind of positive remark, regardless of their actions. In one observation he went over a quiz from the day before. One student did poorly and instead of chastising the student for not trying he simply said, "Everybody has a bad day once in awhile, I know you can do this so let's forget about this grade and move on." He tries to build his student's confidence in themselves, so they leave feeling good about themselves. He wants them to understand what it is they did, why it was or was not appropriate, and realize the effects of their actions on themselves and the class as a whole. Much like the practical interest, "... it is an interest in understanding the environment so that one is able to interact with it"(Grundy, 1987, p13).

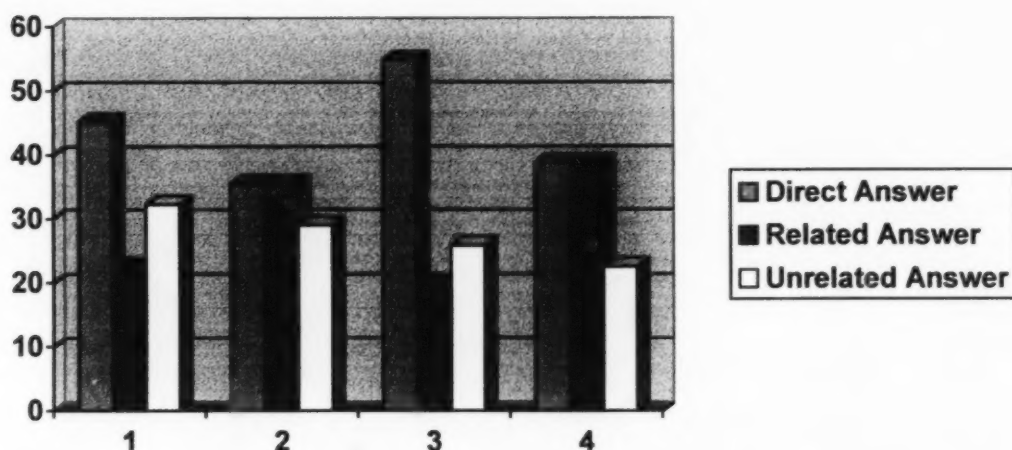
Student Survey

The questions for the student survey came from the answers the teacher gave me during our conversations, and from the completed teacher survey I developed for this study. The student survey was given to 31 students, which equates to 39.7% of his total students. This was two of the four classes he teaches, and one of the classes I observed. There were actually 42 students in the two classes, but 11 of the students were gone on a school-sponsored field trip the day the survey was distributed. The purpose of the survey was to discover if his students perceive the teacher's actions and intentions as practical.

The student survey contained four questions. Each question had an answer that corresponds directly to the answers given to me by the teacher. There was also a related answer

for each question that can be correlated to the answer given to me by the teacher. The related answer means the student's perception of the teacher's actions and intentions are in line with what he thinks he's doing, but what is actually happening is not precisely what the teacher believes he is doing. There is also one unrelated answer that totally contradicts what the teacher believes he is doing.

I will list each question and the answers, and discuss each individually. There will be double asterisk by the direct answer and a single asterisk by the related answer. The chart shows the results of the four questions on the student survey, and how his students viewed his actions and intentions.



1. During a normal class, what do you believe the teacher in this room is trying to do?
 - a. teach us mathematics
 - b. guide us in learning mathematics **
 - c. help us understand mathematics *

Based on the results, students perceive that the teacher is partially succeeding in his belief about the function of a teacher. He originally stated that a teacher should be a "facilitator for student

learning.” A facilitator for student learning is someone who guides students in the direction they need to go to learn whatever it is they are intended to learn. This is associated with the technical aspect of the curriculum. The only answer that can be interpreted as technical is “b”, while answer “c” is concerned with the practical of the curriculum. Only 22 percent of his students felt he was performing in the manner he related to me in the survey. However, 45 percent of his students believe he wants them to go beyond just learning and understand what it is he is teaching. Based on these results, I am confident in saying he is partially succeeding in being a facilitator of student learning.

2. When you sit in this classroom, what kind of feeling do you have about the setting?
 - a. the arrangement of the room and actions of the teacher limit distractions and helps me feel safe and comfortable **
 - b. the arrangement of the room and actions of the teacher does little to limit distractions and help me feel safe and comfortable *
 - c. the arrangement of the room and actions of the teacher does not limit distractions and help me feel safe and comfortable

When asked about the ideal educational setting it was stated it should be free of unusual distractions, comfortable and offer the students a sense of security. Seventy-one percent of those surveyed feel he either accomplished his belief completely, or only partially. Based on the results, the students surveyed believe he is doing what he said he tries to do.

3. Besides mathematics, what do you believe the teacher in this classroom wants you to learn?
 - a. how to be organized
 - b. how to act responsibly *
 - c. how to develop and follow through with a plan of action **

I asked the teacher, if he could teach his students only one thing each year, what would it be? To my surprise, mathematics was not involved. He felt that teaching his students how to develop a plan of action and see it through, with modifications as needed, was the most important thing he could give them. When looking at the results of the student survey he has succeeded in doing just that. Less than 20 percent responded to the answer concerning a plan of action however, over 50 percent felt he was trying to teach them to act responsibly. When you develop a plan of action and see it through to completion you are assuming responsibility and acting accordingly.

4. Which statement do you believe best describes the teacher's actions in the classroom?

- a. the teacher in this classroom always uses different methods to try and motivate us, and help us take responsibility for our own learning **
- b. the teacher in this classroom sometimes uses different methods to try and motivate us, and help us take responsibility for our own learning *
- c. the teacher in this classroom never uses different methods to try and motivate us, and help us take responsibility for our own learning

The question was generated in response to the teacher's personal philosophy of education. He stated "... all students can learn. As teachers we must continuously look for ways to stimulate and motivate students so they will want to learn, and take responsibility for their learning." I believe I can categorically say the students surveyed believe he is doing what he espoused in his personal philosophy. Over 75 percent of his students believe he either always or sometimes tries to motivate them and use different methods to help them take responsibility for their own learning. After compiling the results of the student survey, the students believe this teacher does what he says, and believes, he is doing. The majority of the students that completed the survey also

believe he is practicing what he preaches, those that don't believe this were not asked why, nor did they give a reason why they thought he wasn't.

Discussion

The data shows that in general the practices in the teacher's classroom support his theory he espoused. His actions, words, methods of instructions, classroom setting and student perceptions all support this teachers personal philosophy, and what he thinks he is doing in his classroom.

Although he is practical in his concept of his role, this teacher is very "Technical" in terms of classroom management. As Grundy (1987) states in Curriculum: Product or Praxis, "To achieve this purpose, persons have a basic orientation towards controlling and managing the environment" (p. 11). In his classroom the teacher is in total control of his class, even though he tries to let the students feel they have certain freedoms. His students have a false sense of freedom because they can do certain things without permission, but in reality, the teacher gave the permission at the beginning of the year. The teacher also stresses management as one of the two most important goals for his students to learn. He wants them to learn how to manage their time so they can deal effectively with their responsibilities.

When it comes to teaching however, this teacher appears to apply a practical orientation to his teaching. He does not stand up and lecture to his students so they can simply regurgitate what it is he taught. He wants them to understand what he is teaching them, so they can see how it works and build on it. He is genuinely concerned with their ability to understand mathematics, not just learn it. He tries to bring in real life situations that his students can apply to their lives outside his classroom. He uses their ideas about certain things and tries to expand on them. For example, one activity he did when covering percentages dealt with maintaining a healthy body.

He brought in several different brands of cereal and had his students develop a short commercial using the recommended allowable daily percentages of nutrients and vitamins. Eating right and staying fit is an important topic in our society and he used that concept in his class so his students could see how the concept he was teaching could be used in their personal lives.

Like most teachers, he faces certain barriers, or obstacles, in his classroom and methods of instruction. One huge impasse is the "Hidden Agenda" of our school. The school had a very successful first year as a Middle School, and is expected to improve every year. One specific area where improvement is expected is our Stanford Achievement Test scores. We improved our scores from the previous year by almost 100 percent, and because of this we are expected to improve a modest two- percent each year. This equates to teaching the students many of the skills they need to succeed on the test instead of succeeding in life. Some are equitable in both situations, but not all. This is frustrating for the teacher because it limits what he can do in his classroom as far as bringing in different concepts and ideas. It limits him because the school is susceptible to being checked up on at any time, and must be able to show what we taught, when it was taught, and how it relates to the state mandated curriculum. "A practical cognitive interest will mean that curriculum content will be determined by considerations of the 'good' rather than what is to be taught being selected in order to achieve a set of pre-specified ends" (Grundy, 1987, p. 76). In this sense he does bring in ideas and concepts on his own that he believes are important, but not as many as he would like. He stated that he would like to try some of his ideas in teaching his students certain mathematics concepts. However, due to time constraints and the amount of subject matter he needs to cover during the academic year his ideas are put on the back burner. When I questioned this he stated the following, "I have an activity for teaching fractions, decimals, percentages, and probabilities, but it's an activity that covers a ten-week period and it

would put my students to far behind the other classes.” He was concerned with keeping up with the other math classes in the school. Here again is an indication of the pressures of the school’s “Hidden Agenda”. Get the students ready for the SAT’s, and be sure you cover what we are supposed to cover. This aside, the students surveyed, my observations and collected data support my assertion that the teacher I chose for my study does practice the theory he espouses.

One interesting conclusion I reached from this project, not related to the teacher but to myself, is that I am not doing what I have thought I was doing as I teach my students. What I discovered about myself was not all that encouraging, nor was it totally discouraging either.

By observing a teacher similar to myself I discovered that I am not the freewheeling, fly by the seat of my pants kind of teacher I thought I was. I have always assumed that I was doing my own thing in my classroom as a somewhat emancipatory teacher. After completing this project I reexamined my own actions and discovered I am leaning toward the mandated curriculum and technical instruction. I believed from my first year that I was teaching my students what I felt was important, and at the same time trying to align it with what I was supposed to teach. However, I discovered I was teaching what I was supposed to teach and trying to align it with what I wanted to teach. I came to this conclusion during my observations. I sat there and watched and said to myself, happily, I do that, I do that, I do that. But after awhile I started saying to myself, I do that, but in a negative way. I discovered that I too am very “technical” when it comes to managing my classroom. I have given my students certain freedoms, but those freedoms came from me in an attempt to control my environment. In my opinion, I believe I accepted this because of the age group I teach. Having classes full of young adolescents I have learned that you need to be specific and up front with them. Otherwise their natural curiosity and need to explore their limits will get the best of them, and me if I allowed it. I can honestly say that I will not commit to a

wholesale change in this respect because I do need to keep control of my class in order to create an environment conducive to learning. However, I may make a few minor adjustments in my classroom management. What I feel may be necessary to do is to come up with some negotiated rules within the confines of my class that does allow the students to have some say in their classroom environment. I think it will give them a sense of ownership in the rules and build their support and adherence to them.

I also found out that my ideas about teaching fall between the practical and the emancipatory: more towards the practical in all honesty. I, like the teacher I observed, want my students to understand what it is I am teaching, understand it, and see how it can be applied to their personal lives outside the school. I try to accomplish this by planning activities as closely related to real life situations as possible. For example, when teaching the circulatory system I purchased student blood pressure kits and taught them how to take their own blood pressure. Once they understood how to do it, how it worked, and what it meant, we had a blood pressure clinic and invited teachers and staff members in for a free blood pressure reading. During the daylong clinic my students took the teacher's and staff's blood pressure and then instructed them on how to live a healthy lifestyle and maintain a normal blood pressure. It went very well and they saw how what they were learning was actually used in real life, not just textbooks. Does this mean I am an emancipatory teacher? Not at all! What it does mean to me is that I am not the kind of teacher whose idea of teaching, technical, is just standing and lecturing, having students take a few notes, and then testing them on it. I want my students involved in my classroom in whatever it is I am trying to teach. This discovery was one I was glad to find out.

Conclusion

After spending many hours reading and re-reading the collected data, and learning what I did about myself as a teacher, I came to this conclusion. This type of active research experience would be a great help in every school, to every teacher, principal, and administrator. Through objective observations, and with a little knowledge about curriculum theory, I was able to see a colleague, and myself, from a different point of view. It was a point of view that contradicted the image I had of myself as a teacher. The thought of every teacher partaking in a study such as this makes me wonder what would happen to our education system as a whole if we all learned something new about ourselves as educators. Another possibility, one I like even more, is to videotape myself actually teaching. The old adage "that pictures don't lie" would take on a new meaning for me as an individual, and a teacher. Just maybe, if teachers submitted themselves to this type of honest, objective self-evaluation, many of the complaints and knocks our school systems are receiving might cease, and possibly reverse the tarnished image of the teacher and school in our society today.

Teacher Survey

1. Briefly state why you decided to become a teacher?
2. What do you feel is the most important function of a teacher?
3. What are the 2 most important goals you set for your students and what methods do you use to get them to achieve them?
4. What is your idea of an effective educational setting?
5. If you could teach your students only one thing each year, what would it be?
6. If you had the ability to change any part of the current education system, which part would it be and why?
7. What is your personal philosophy of education?

Student Survey

Please take a few minutes and complete this survey to the best of your ability. Circle the response you believe best answers the question. Choose only one response for each question. All of your responses to the questions should be based on your experiences in the class that you are currently in. Do not consider any other classes when responding. Your names are not required, and thank you for your time and cooperation.

1. During your normal class, what do you believe the teacher in this room is trying to do?
 - a. teach us mathematics
 - b. guide us in learning mathematics
 - c. help us understand mathematics

2. When you sit in this classroom, what kind of feeling do you have about the setting?
 - a. the arrangement of the room and actions of the teacher limit distractions and helps me feel safe and comfortable
 - b. the arrangement of the room and actions of the teacher does little to limit distractions and help me feel safe and comfortable
 - c. the arrangement of the room and actions of the teacher does not limit distractions and help me feel safe and comfortable

3. Besides mathematics, what do you believe the teacher in this class wants you to learn?
 - a. how to be organized
 - b. how to act responsibly
 - c. how to develop and follow through with a plan of action

4. Which statement do you believe best describes the teacher's actions in this classroom?
 - a. the teacher in this classroom always uses different methods to try and motivate us to help us take responsibility for our own learning
 - b. the teacher in this classroom sometimes uses different methods to try and motivate us and help us take responsibility for our own learning
 - c. the teacher in this classroom never uses different methods to try and motivate us and help us take responsibility for our own learning

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